Conference Paper

Measuring Selectivity and Market Timing Performance of Mutual Funds in Indonesia Using Single and Dual Beta Models

V. Santi Paramita, Ferikawita Magdalena Sembiring, and Danisa Safitri

Faculty of Economics and Business, Universitas Jenderal Achmad Yani

Abstract

This study aims at measuring the performance of mutual funds based on the ability of investment managers in conducting selectivity and market timing by using the Treynor-Mazuy Model. The method used in this study is explanatory survey method or explanatory research. The populations in this study were 167 mutual funds in Indonesia in the period of 2008-2014. Based on purposive sampling criteria, the samples were 29 mutual funds. The data analysis technique used was two-pass regression model. The first pass regression was based on time series data and the second pass regression was based on cross-section. Testing the model was based on single beta model and dual beta model.

This study showed that in single beta model, without separating bullish and bearish market conditions, mutual fund investment managers in Indonesia did not have selectivity ability, but had market timing capability. If a dual beta model that separated the bullish and bearish market conditions was used, the difference of the performance of the investment managers was showed. In bullish market condition, mutual fund investment managers in Indonesia did not have selectivity capability but had market timing capability. On the other hand, in bearish market condition, mutual fund investment managers in Indonesia did not have selectivity capability and did not have market timing capability.

Keywords: Single and Dual Beta, Selectivity, Market Timing.

1. Introduction

Several previous studies have proven that beta behavior is unstable, not stationary, and time-varying. Berglund and Knif (1999) and Chen (1982) proved that beta reflecting the systematic risk moves unstably following the changing economic conditions of a country. Studies by Brooks et al. (1988); Ferson et al. (1987), and Pettengill et al., (1995; 2002) proved that unstable beta cannot act as a predictor of return of mutual funds. Therefore, the measurement of the performance of mutual funds with constant beta

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assumptions over time (single beta) has the potential to produce biased estimation models.

Berglund and Knif (1999) and Bollerslev et al. (1988) proposed modeling using dual beta. The dual beta model is proven to improve the relevant beta accuracy as the deciding factor of expected returns. Paramita (2018) has tested the Treynor-Mazuy condition model with dual beta, which results in more valid and robust estimation models. Dual beta testing is testing the model by separating the beta in bull market (upside beta) and bear market (down side beta). This is done to overcome the problem of time-varying beta volatility. The results of this study support the results of studies by Fabozzi and Francis (1987) and Brooks et.al., (1988), which state that double beta testing yields valid and robust models that meet the criteria of a good model, which are BLUE (Best, Linear, Unbiased and Estimate).

This study aims at measuring the performance of mutual funds based on the ability of investment managers in conducting selectivity and market timing by using the Treynor-Mazuy Model (1966). The formation of regression model uses single beta and dual beta, which will be analyzed to find out the best model.

In this study, researcher used Treynor-Mazuy method because this method has several advantages such as: (1) capable of demonstrating the performance of mutual funds rather than market performance as the benchmark (2) capable of measuring the ability of investment managers in selectivity and market timing. The research conducted by Murhadi (2010), Skrinjaric (2013), and Chuang (2013) showed the ability of market timing and selectivity of investment managers using Treynor-Mazuy method.

2. Literature Review

Mutual fund is a company that pools money from a group of people with common investment goals to buy securities such as stocks, bonds, money market instruments, a combination of these investments, or even other funds. The investment managers must have the ability of selectivity and market timing. Selectivity is the ability of investment managers in selecting stocks that can deliver the expected returns in the future. On the other hand, market timing is the ability of investment managers in making adjustments in order to anticipate changes in the asset portfolio or the market price movement in general.

In this study, Treynor-Mazuy Model (1966) was used to measure the performance of mutual fund. Treynor-Mazuy equation model:

$$R_{pt} - R_{ft} = \alpha + \beta_p \left(R_{mt} - R_{ft} \right) + \beta_{pt} \left(R_{mt} - R_{ft} \right)^2 + \varepsilon_{pt}$$

Alpha (α) in the equation describes the capability of investment manager in stock selectivity. A positive Alpha (α) value of indicates that the investment manager has stock selectivity ability because positive Alpha (α) shows that mutual funds can generate returns greater than the market return. According to Waelan (2008), Beta Pt (β_{pt}) in the equation describes the market timing ability. A positive Beta Pt (β_{pt}) value indicates that investment manager has market timing ability.

Investment managers that have market timing ability will change their portfolio component with beta that has higher value when the market condition is up (Rm > Rf). On the contrary, when the market condition is down (Rm < Rf), investment manager will change their portfolio component with beta that has the lower value. Thus, market timing strategy would be done by buying stock in the bullish market condition and selling stock in the bearish market condition (Paramita, 2015; 2017).

Conditional beta or the dual beta model was introduced by Fabozzi and Francis (1977) when testing the instability of beta based on the condition of markets, which are bull and bear market. Bhardwaj and Brook (1993) also used the dual beta model to test the effect of firm size to beta in the same markets condition. They found that the behavior of beta was significant in both markets based on an indicator that the market returns were greater (smaller) than the median of the returns.

The assumption of the conditional beta is on the differences in market timings which segmented into up and down markets. A down market generates a downside beta illustrating lower systematic risk so the investors' required rate of returns will be lower. In contrary, an up market generates an upside beta showing higher systematic risk so the investors' required rate of returns will be higher to compensate the high level of risk that must be borne.

Bear market indicates that market conditions are active because there is an increase in stock prices accompanied by an increase in trading volume. On the other hand, the bull market indicates that market conditions are sluggish due to declined prices followed by a decrease in trading volume. The bullish and bearish market conditions reflect fluctuations in stock prices. Some studies often ignore the presence of bullish and bearish market conditions in the capital market, resulting in a biased estimation value.

Research on the stability of the alpha and beta in bullish and bearish market conditions, has been performed by Fabozzi and Francis (1977). Research results showed that the value of alpha and beta were not different in bullish and bearish market conditions. However, in subsequent research, Fabozzi and Francis (1979) proved that there were differences of beta in mutual funds in bullish and bearish market conditions. Beta on bullish market conditions generated a positive value, while beta in bearish market conditions yielded a negative value (Paramita, 2015; 2017).

Previous studies have proven that the behavior of beta is unstable, not stationary, and time-varying. Several empirical studies prove that unstable beta cannot act as a predictor of portfolio return (Brooks et al., 1998; Ferson et al., 1987; Pettengill et al., 1995; 2002). Therefore, testing model of mutual fund performance measurement by taking into account the condition of time-varying beta volatility is expected to improve the accuracy of the beta relevant as a determinant factor from expected return (Berglund and Knif, 1999; Bollerslev et al., 1988).

Pettengill et al. (1995) concluded that in order to estimate the beta, it is needed to establish a model that accommodates differences between upside beta and downside beta (dual beta) so as not to potentially produce bias beta. Upside beta is beta condition at the time of bull market, indicated by the market return above the risk-free return. On the other hand, downside beta is beta condition at the time of bear market, indicated by the market return below the risk-free return. It is given that research with constant beta (single beta) can lead to the condition of each other's off-set between the upside and downside betas. Thus, beta has the potential in producing insignificant beta with a slope that tends to be flat.

Results of subsequent research conducted by Hodoshima et al. (2000), Sudarsono (2010), and Paramita (2015; 2017) showed that there were differences in the value of the beta at the time of beta up and beta down. In the upside beta condition, a positive beta will be formed. On the other hand, in the downside beta condition, a negative beta will be formed. Results of lengthy research conducted by Bhardwaj and Brooks (1993), Bos and Newbold (1984), and Faff and Brooks (1998) recommended the use of dual beta in testing the model.

The research conducted by Sudarsono (2010) and Paramita (2015; 2017) showed the difference in beta value in bullish and bearish market condition. In the bullish market condition, positive beta value will be generated while in the bearish market condition, negative beta value will be will generated. Therefore, testing the bullish and bearish market conditions should be done so that the wrong investment decisions can be avoided. Dual beta testing by separating the beta in bullish market condition

(upside beta) and bearish market condition (downside beta) generated two estimation models that were more valid and robust (Paramita, 2016). This study will measure the performance of mutual fund by considering the bullish or bearish market conditions.

3. Methods

This study employed explanatory survey method or explanatory research. This study will conduct a behavioral observation of mutual funds in Indonesia using monthly data for seven years from Bank of Indonesia and the Financial Services Authority (OJK, *Otoritas Jasa Keuangan*).

The populations in this study were 167 mutual funds in Indonesia in the period of 2008-2014. Based on purposive sampling criteria, the samples were 29 mutual funds. Stages of testing data consist of stationary testing and classical assumption testing. The data analysis technique used was two-pass regression model. The first pass regression was based on time series data and the second pass regression was based on cross-section. Testing the model was based on single beta model and dual beta model.

4. Results and Discussion

4.1. Performance of mutual fund in single beta model

In single beta model, the regression equation of the Treynor-Mazuy model without separating bullish and bearish market conditions. The regression equation model in single beta was as follows

$$Y = -0.001 + 1.098(R_m - R_f) + 0.228(R_m - R_f)^2$$

Regression test results described that the investment managers of mutual fund in Indonesia had selectivity ability in single beta model, without separating bullish and bearish market condition. Based on the regression test results, α values obtained in the regression equation was -0.001 and was not significant. This indicated that the mutual fund investment managers in Indonesia from 2008 to 2014 did not have selectivity ability showed with α that was negative but was not significant. This means that in single beta model without separating bullish and bearish market conditions, investment managers of mutual fund in Indonesia did not have selectivity ability. However, it did not mean the investment manager did not have the ability of selectivity at all, this was indicated by the value of α that was negative but was not significant.

The regression test results showed that the investment managers of mutual fund in Indonesia had market timing ability in single beta model, without separating bullish and bearish market condition. The regression test results obtained positive β value of 1.098 and was not significant. This means that without separating bullish and bearish market conditions, investment managers of mutual fund in Indonesia had market timing ability showed by insignificant positive β. Insignificant positive β indicated that the mutual fund investment managers had market timing ability, but the investment manager's ability to do market timing was not meaningful for excess return of mutual fund.

4.2. Performance of mutual fund in dual beta model: Bullish market condition

In dual beta model, the beta was separated in bullish and bearish market conditions into two regression equations. The first regression equation consists of upside beta in bull market and the second regression equation consists of downside beta in bear market. The regression equation in bullish market conditions are as follows

$$Y = 0.002 + 0.864(R_m - R_f) + 1.905\left(R_m - R_f\right)^2$$

Regression test results described that the investment managers of equity mutual fund in Indonesia had selectivity ability in bullish market conditions. The regression test results obtained positive α value that was equal to 0.002. Thus, the investment managers of mutual funds in Indonesia had selectivity ability in market as indicated by the value of α that was positive but not significant. Non-significant positive α value showed that mutual fund investment managers had selectivity ability, but without meaning for the excess return of mutual funds. In other words, it was just by chance the investment manager had the ability to pick stocks. In addition, the positive α values shows that mutual funds generated returns greater than the market return to the market conditions.

Regression test results showed that the investment managers of mutual fund in Indonesia had market timing ability in market condition, could be seen from the β. The regression results obtained positive β value that was equal to 1.095. Thus, the investment managers of mutual funds in Indonesia had market timing ability in the market showed with positive and significant β.

4.3. Performance of Mutual Fund in Dual Beta Model: Bearish Market Condition

The regression equation in bearish market conditions is as follows

$$Y = 0.006 + 1.211(R_m - R_f) + 0.474(R_m - R_f)^2$$

Regression test results described that the investment managers of equity mutual fund in Indonesia had selectivity ability in bearish market condition. It could be seen by the value that was 0.006 and insignificant. This reflected that investment managers had good ability in the portfolio of mutual funds. However, the formed mutual funds could not generate returns above their market returns. Thus, the selectivity ability was not able to generate high profits because the resulting return was below market return.

On the other hand, the test results showed that in bearish market conditions, investment managers in Indonesia had market timing capabilities. This could be seen from the positive β value of 0.474 that was not significant. Thus, investment managers in Indonesia had the ability to buy and sell shares at the right time. However, market timing capability could not result in the re-measurement of mutual funds.

The following is a summary of the performance of mutual funds by using single beta or dual beta that separated the bullish and bearish market conditions:

4.4. Comparison Results of Equity Mutual Fund Performance in Single and Dual Beta

	Selectivity	Sign	Market Timing	Sign
Single Beta, Without Separating Bull and Bearish market conditions	-0.001	0.341	0.228	0.056
Dual Beta in Bull Market Conditions	0.002	0.262	1.905	0.007
Dual Beta in Bearish market conditions	0.006	0.150	0.474	0.148

The table above shows that in single beta model without separating bullish and bearish market condition, investment fund mutual fund managers in Indonesia 2008-2014 period did not have stock selection ability, which was indicated by negative value (-0.001) and not significant (0.341), but had market timing capability shown by positive β pt value (0.228) and not significant (0.056).

Dual beta test in bullish market condition, investment fund mutual fund managers in Indonesia 2008-2014 period had stock selection ability which was indicated by positive α (0.002) and not significant (0.262), and had market timing capability indicated by positive β_pt value (1.905) and significant (0.007). While in bearish market condition, stock funds mutual fund managers in Indonesia 2008-2014 period have stock selection ability, which was indicated by positive α value (0.006) and not significant (0.150), and had market timing capability indicated by positive β pt value (0.474) and not significant (0.148).

5. Conclusion

During the 2008-2014 study period, performance assessments on equity funds in Indonesia using single and dual beta models indicated the difference in results. In single beta model, equity funds showed only insignificant market timing performance but did not have selectivity performance. On the other hand, in dual beta model, both in bullish and bearish market conditions, stock funds in Indonesia had selectivity and market timing performance, although not significant. However, in bullish market condition, the investment manager showed significant market timing capability.

If referring to Pettengill et al. (1995) and Paramita (2018) who indicate that the dual beta model produced a more valid and robust estimation model, it was better to measure the performance of a mutual fund using a dual beta model that accommodated the difference between upside beta and downside beta. However, when using the dual beta model, this study showed the market performance measurement results that were not in accordance with the results of the research by Hodoshima et al. (2000), Sudarsono (2010), and Paramita (2015, 2017). Previous research has shown that there were differences in beta values in bullish and bearish market conditions. Bullish market condition would form a positive beta while bearish market condition would form a negative beta. Beta positively indicates market timing ability.

The results of this study indicated a positive beta value in both market conditions. Beta in bullish market condition showed a significant positive value while bearish market condition showed an insignificant positive value. This indicated that the investment manager had market timing performance in every market condition. However, only in bullish market condition market timing performance could increase the return of mutual funds significantly.

The results of this dual beta study showed that in bullish market condition, when stock price movements tended to increase, investment managers were able to choose

the right moment to buy and sell shares. This market timing capability was ultimately capable of generating a significant increase in return of mutual funds. However, in bearish market conditions, it seemed that investment managers were not able to predict the movement of stock prices that tended to fall. Their decision to buy and sell stocks was often not at the right time, so it could not generate a positive return.

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